

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Dutzmann *et al.*

Appl. No.: 09/843,396

Filed: April 26, 2001

For: Fungicide Active Substance Combinations

Confirmation No.: 4187

Art Unit: 1616

Examiner: Mei-Ping Chui

Declaration of Peter Dahmen Under 37 C.F.R. §1.132

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

I, Peter Dahmen, of Altebrücker Str. 61, 41470 Nuss, Germany, a citizen of

Germany, hereby declare:

1. that I am a biologist having studied at the University of Bonn, Germany;
2. that I received the degree of Dr. agr. at the University of Bonn, Germany;
3. that I entered the employ of Bayer Aktiengesellschaft, Leverkusen, Germany, in 1991, where I have been employed in the department of Biology Herbicides, that after the spin-off from Bayer CropScience AG I am now employee of this company in the department of Biology Fungicides;
4. that I have specialized in the field of fungicide research;
5. that the following tests have been carried out under my supervision and control.

Biological Tests

The advanced fungicidal activity of the active compound combinations according to the invention is evident from the example below. While the individual active compounds exhibit weaknesses with regard to the fungicidal activity, the combinations have an activity which exceeds a simple addition of activities.

A synergistic effect of fungicides is always present when the fungicidal activity of the active compound combinations exceeds the total of the activities of the active compounds when applied individually. The expected activity for a given combination of two active compounds can be calculated as follows (cf. Colby, S.R., "Calculating Synergistic and Antagonistic Responses of Herbicide Combinations", Weeds 1967, 15, 20-22):

If

X is the efficacy when active compound A is applied at an application rate of m ppm (or g/ha),

Y is the efficacy when active compound B is applied at an application rate of n ppm (or g/ha),

E is the efficacy when the active compounds A and B are applied at application rates of m and n ppm (or g/ha), respectively, and

then

$$E = X + Y - \left(\frac{X \cdot Y}{100} \right)$$

The degree of efficacy, expressed in % is denoted. 0 % means an efficacy which corresponds to that of the control while an efficacy of 100 % means that no disease is observed.

If the actual fungicidal activity exceeds the calculated value, then the activity of the combination is superadditive, i.e. a synergistic effect exists. In this case, the efficacy which was actually observed must be greater than the value for the expected efficacy (E) calculated from the abovementioned formula.

Fusarium graminearum test (barley) / preventive

Solvent: 49 parts by weight of n,n-dimethylacetanid
 Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound or active compound combination at the stated rate of application. After the spray coating has been dried, the plants are slightly injured by using a sandblast and afterwards they are sprayed with a conidia suspension of *Fusarium graminearum*. The plants are placed in the greenhouse under a translucent incubation cabinet at a temperature of approximately 22°C and a relative atmospheric humidity of approximately 100 %. The test is evaluated 5 days after the inoculation. 0 % means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Results: *Fusarium graminearum* test (barley) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
Prothioconazole	30	29	
Tebuconazole	90	14	
Prothioconazole + Tebuconazole 1:3	30 + 90	57	39

* found = activity found

** calc. = activity calculated using Colby's formula

Leptosphaeria nodorum test (wheat) / preventive

Solvent: 49 parts by weight of N,N-dimethylacetamid
 Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound or active compound combination at the stated rate of application. After the spray coating has been dried, the plants are sprayed with a spore suspension of *Leptosphaeria nodorum*. The plants remain for 48 hours in an incubation cabinet at approximately 20°C and a relative atmospheric humidity of approximately 100 %. The plants are placed in the greenhouse at a temperature of approximately 22°C and a relative atmospheric humidity of approximately 80 %. The test is evaluated 8 days after the inoculation. 0 % means an efficacy which corresponds to that of the untreated control, while an efficacy of 100 % means that no disease is observed.

Results: Leptosphaeria nodorum test (wheat) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
Prothioconazole	90	40	
Tebuconazole	30	40	
Prothioconazole + Tebuconazole 3:1	90 + 30	80	64

* found = activity found

** calc. = activity calculated using Colby's formula

Fusarium nivale (var. *maius*) test (wheat) / preventive

Solvent: 49 parts by weight of *n,n*-dimethylacetamid
 Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound or active compound combination is mixed with the stated amounts of solvent and emulsifier, and the concentrate is diluted with water to the desired concentration.

To test for preventive activity, young plants are sprayed with the preparation of active compound or active compound combination at the stated rate of application. After the spray coating has been dried, the plants are slightly injured by using a sandblast and afterwards they are sprayed with a conidia suspension of *Fusarium nivale* (var. *maius*). The plants are placed in the greenhouse under a translucent incubation cabinet at a temperature of approximately 10°C and a relative atmospheric humidity of approximately 100 %. The test is evaluated 5 days after the inoculation. 0% means an efficacy which corresponds to that of the untreated control, while an efficacy of 100% means that no disease is observed.

Results: *Fusarium nivale* (var. *maius*) test (wheat) / preventive

Active compounds	Application rate of active compound in ppm a.i.	Efficacy in %	
		found*	calc.**
Prothioconazole	90	25	
Tebuconazole	90	0	
Prothioconazole + Tebuconazole 1:1	90 + 90	50	25

* found = activity found

** calc. = activity calculated using Colby's formula

Reply to Office Action of November 23, 2010

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The undersigned declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed at Monheim, Germany,

2011-03-18

Date



Dr. Peter Dahmen